been very much retarded, had occurred at last, and risen to a maximum.

378. With a mixture of ninety-nine volumes of oxygen and hydrogen (374) with one of olefiant gas, a feeble action was evident at the end of fifty minutes; it went on accelerating (366) until the eighty-fifth minute, and then became so intense that the gas exploded. Here also the retarding effect of the olefiant gas was very beautifully illustrated.

379. Plates prepared by alkali and acid (341) produced effects corresponding to those just described.

380. It is perfectly clear from these experiments that *olefiant gas,* even in small quantities, has a very remarkable influence in preventing the combination of oxygen and hydrogen under these circumstances, and yet without at all injuring or affecting the power of the platina.

381. Another striking illustration of similar interference may be shown in *carbonic oxide ;* especially if contrasted with *carbonic acid.* A mixture of one volume oxygen and hydrogen (374) with four volumes of carbonic acid was affected at once by a platina plate prepared with acid, etc. (341), and in one hour and a quarter nearly all the oxygen and hydrogen was gone. Mixtures containing less carbonic acid were still more readily affected.

382. But when carbonic oxide was substituted for the carbonic acid, not the slightest effect of combination was produced; and when the carbonic oxide was only one-eighth of the whole volume, no action occurred in forty and fifty hours. Yet the plates had not lost their power; for being taken out and put into pure oxygen and hydrogen, they acted well and at once.

383. Two volumes of carbonic oxide and one of oxygen were mingled with nine volumes of oxygen and hydrogen (374). This mixture was not affected by a plate which had been made positive in acid, though it remained in it fifteen hours. But when to the same volumes of carbonic oxide and oxygen were added thirty-three volumes of oxygen and hydrogen, the carbonic oxide being then only $_{r}$^th part of the whole, the plate acted, slowly at first, and at the end of forty-two minutes the gases exploded.

384. These experiments were extended to various gases and vapours, the general results of which

may be given as follow.
Oxygen, hydrogen, nitrogen, and nitrous oxide, when used to dilute the mixture of oxygen and hydrogen, did not prevent the action of the plates even when they made four-fifths of